AUDIO TECHNOLOGY I

COURSE DESCRIPTION

Audio Technology I is designed to give students the basic knowledge and technical skills needed to prepare them for post-secondary study or entry level employment in the audio industry. The students will study the language of music in its written form. Students will develop knowledge of the business of music which will include legal and marketing issues. They will also develop the technical skills to operate the equipment necessary to produce a finished audio product in both live performance and studio situations. In all situations, students will present themselves with integrity and professional behavior.

It is strongly recommended that administration and guidance follow the scope and sequence and course recommendations as listed.

Recommended: Career Management Success

Recommended Credits: 1

Grade Levels: 9th – 10th

Number of Competencies in Course: 47

AUDIO TECHNOLOGY I

STANDARDS

1.0   Students will demonstrate Audio Technology safety practices, including Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) requirements for an audio recording facility.

2.0   Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

3.0   Demonstrate understanding of the physics of sound and audio reproduction.

4.0   Students will show knowledge in the process of basic recording and sound reinforcement.

5.0   Students will analyze recorded and live audio for technical quality.

6.0   Demonstrate the ability to use industry equipment to record audio onto standard medias.

7.0   Students will show ability to edit recorded material on different media.

8.0   Student will show ability to design and create audio production for desired mood and effect.

9.0   Students will show understanding of the music business.

10.0   Students will learn the basics of written music.

11.0   Students will show knowledge of the history of the audio industry.

AUDIO TECHNOLOGY I

STANDARD 1.0

Student will perform safety examinations and maintain safety records.

LEARNING EXPECTATIONS

The student will:
1.1   Follow OSHA and EPA regulations and manufacturer specifications affecting audio systems technology.
1.2   Respond to safety communications referring to audio systems.
1.3   Pass a written safety examination with 100% accuracy.

1.4   Pass a performance examination on equipment with 100% accuracy.

1.5   Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
1.1   Identify OSHA and EPA regulations and manufacturer specifications affecting audio systems technology.
1.2   Respond to safety communications referring to audio systems.
1.3   Pass a written safety examination with 100% accuracy.

1.4   Pass a performance examination on equipment with 100% accuracy.

1.5   Maintain a portfolio record of written safety examinations and equipment examinations for which the student has passed an operational checkout by the instructor.

SAMPLE PERFORMANCE TASK

- Assess the work area for safety hazards.
- Design a corrections program for identified hazards.
- Read manufacturer specifications to determine safe practices while working with audio systems.
- Using case scenarios, determine the results of unsafe practices including accidents, cost effectiveness, time management, and cost to the technicians.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technical Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA)

AUDIO TECHNOLOGY I

STANDARD 2.0

Students will demonstrate leadership, citizenship, and teamwork skills required for success in the school, community, and workplace.

LEARNING EXPECTATIONS

The student will:
2.1 Exhibit positive leadership skills.
2.2 Participate in SkillsUSA as an integral part of classroom instruction.
2.3 Assess situations and apply problem-solving and decision-making skills to client relations in the community and workplace.
2.4 Demonstrate the ability to work cooperatively with others in a professional setting.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student:
2.1 Demonstrates character, leadership, and integrity using creative and critical-thinking skills.
2.2A Applies the points of the creed to personal and professional situations.
2.2B Participates and conducts meetings and other business according to accepted rules of parliamentary procedure.
2.3 Analyzes situations in the workplace and uses problem-solving techniques to solve the problem.
2.4A Participates in a community service project.
2.4B Assists with an officer campaign with Tennessee SkillsUSA.

SAMPLE PERFORMANCE TASK

- Create a leadership inventory and use it to conduct a personal assessment.
- Participate in various SkillsUSA programs and/or competitive events.
- Evaluate an activity within the school, community, and/or workplace and list effects of the project.
- Implement an annual program of work.
- Prepare a meeting agenda for a SkillsUSA monthly meeting.
- Attend a professional organization meeting.
- Participate in the American Spirit Award competition with SkillsUSA.

INTEGRATION LINKAGES

SkillsUSA, *Professional Development Program,* SkillsUSA, Communications and Writing Skills, Teambuilding Skills, Research, Language Arts, Sociology, Psychology, Math, Technical Math, English IV: Communications for Life, Social Studies, Problem Solving, Interpersonal Skills, Employability Skills, Critical-Thinking Skills, SCANS (Secretary's Commission on Achieving Necessary Skills), Chamber of Commerce, Colleges, Universities, Technology Centers, and Employment Agencies

AUDIO TECHNOLOGY I

STANDARD 3.0

Students will demonstrate understanding of the physics of sound and audio reproduction.

LEARNING EXPECTATIONS

The student will:
3.1   Analyze science of frequency, wavelength, phasing and how they are controlled.
3.2   Evaluate the concepts of acoustics, diffraction and reverberation.
3.3   Demonstrate how different media affect the characteristics of natural and reproduced frequencies and wavelengths.
3.4   Produce reverberation in a studio setting both naturally and artificially.
3.5   Identify all parts of the human ear and its capabilities.
3.6   Identify the major types of recording media and the advantages and disadvantages of each.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The Student must:
3.1   Use the science of frequency, wavelength, phasing to show how they are controlled.
3.2   Describe the concepts of acoustics, diffraction and reverberation.
3.3   Show how adding different media affect the characteristics of natural and reproduced frequencies and wavelengths.
3.4   Use microphones and various plug-ins to create reverberation in a studio setting both naturally and artificially.
3.5   Describe all parts of the human ear and its capabilities.
3.6   List the major types of recording media and the advantages and disadvantages of each.

SAMPLE PERFORMANCE TASK

- Listen to and evaluate samples of recorded media.
- Illustrate the process of human hearing.
- Draw examples of sound frequencies.
- Explain amplitude and sample rates.

INTEGRATION LINKAGES

Mathematics, , Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Technical Math, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

STANDARD 4.0

Students will show knowledge in the process of basic recording and sound reinforcement.

LEARNING EXPECTATIONS

The student will:
4.1 Identify basic industry terminology.
4.2 Identify the dynamic and condenser microphones and their primary uses.
4.3 Identify the types of connectors used in basic operations.
4.4 Demonstrate knowledge of basic studio design.
4.5 Analyze the basics of sound and signal flow.
4.6 Demonstrate basic knowledge of mixing console setup for live sound and recording applications.
4.7 Demonstrate equalizers ability to control tone, timbre and frequency.
4.8 Analyze speaker designs and placement for studio and live performance.
4.9 Demonstrate a basic understanding of ADC (analog to digital conversion.).

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
4.1 Use basic industry terminology in context.
4.2 Determine the best type of microphone (dynamic or condenser) for specified situations.
4.3 Use various connectors appropriate for basic operations.
4.4 Simulate a basic studio design for optimal recording.
4.5 Create a chart to show the basics of sound and signal flow.
4.6 Design a flow chart showing signal flow for vocal and instrument recording.
4.7 Use equalizers to control tone, timbre and frequency.
4.8 Determine best speaker designs and placements for studio and live performance.
4.9 Produce graphs showing ADC (analog to digital conversion.).

SAMPLE PERFORMANCE TASK

- Set up and make all connections for a recording session.
- Choose appropriate microphone and set correct levels.
- Design a digital studio.
- Draw a signal flow chart to show routing from instrument to digital recorder.
- Draw a speaker placement chart for live performance.

INTEGRATION LINKAGES

Mathematics, English IV: Communications for Life, Technical Math, Physics, Science, Technology Literacy, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

STANDARD 5.0

Students will analyze recorded and live audio for technical quality.

LEARNING EXPECTATIONS

The student will:
5.1 Demonstrate ability to identify tonal quality and sequential anomalies.
5.2 Identify changes in mood due to change in volume or style of recorded audio.
5.3 Listen and identify overloading or clipping in playback of recorded material.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
5.1 Use a variety of plug-ins to identify tonal quality and sequential anomalies.
5.2 Use different music genres to identify changes in mood due to change in volume or style of recorded audio.
5.3 Use meters and LEDs to help listen and identify overloading or clipping in playback of recorded material.

SAMPLE PERFORMANCE TASK

- Listen and critique a sample of recorded audio.
- Write summation providing foundation for critique and possible solutions to errors noted.
- Describe mood changes in various types of recordings.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

STANDARD 6.0
Students will demonstrate the ability to use industry equipment to record audio onto digital medias.

LEARNING EXPECTATIONS
The student will:
6.1 Demonstrate the ability to choose appropriate microphones for specific recording situations.
6.2 Demonstrate the ability to correctly place microphones for specific recording situations.
6.3 Know when and how to use phantom power.
6.4 Demonstrate ability to connect and use various connection adapters.
6.5 Demonstrate basic knowledge in the use of microphone pre-amps, compressors, plug-ins an other outboard equipment.
6.6 Demonstrate ability to process signal through various mixing consoles.
6.7 Identify signal strength and set appropriate levels for incoming signals.
6.8 Set up tracking to recording unit or computer using appropriate levels.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET
The student must:
6.1 Use a variety of microphones for specific recording situations.
6.2 Place microphones in various positions for specific recording situations.
6.3 Describe effects of phantom power .
6.4 Connect, identify, and use various connection adapters for microphones and instruments.
6.5 Describe and identify microphone pre-amps, compressors, plug-ins and other outboard equipment.
6.6 Route audio signal through various mixing consoles.
6.7 Create hi/lo forms of signal strength and set appropriate levels for incoming signals.
6.8 Use computer program to set up tracking to recording unit or computer using appropriate levels.

SAMPLE PERFORMANCE TASK

- Set up microphones for recording session.
- Create a track sheet.
- Create short production using basic audio techniques.
- Evaluate and critique edited production for meeting of goals and objectives.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

STANDARD 7.0

Students will show ability to edit recorded material on different media.

LEARNING EXPECTATIONS

The student will:
7.1 Demonstrate knowledge of editing terminology.
7.2 Demonstrate knowledge in panning and fading for effect.
7.3 Follow backup procedures to prevent loss of material.
7.4 Demonstrate knowledge of adding effects to portions of recordings.
7.5 Demonstrate ability to "cut and paste" part of recorded material to create finished product.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
7.1 Use editing terminology in context.
7.2 Create a music track featuring panning and fading for effect.
7.3 Make backup disc and use backup procedures to prevent loss of material.
7.4 Use various plug-ins to add effects to portions of recordings.
7.5 Edit track by "cutting and pasting" sections of recorded material.

SAMPLE PERFORMANCE TASK

- Produce finished product by rearranging provided audio sample.
- Edit and mix for final product.
- Use pan and delay effects for desired effects.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV:
Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation,
Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem
Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills
(SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational
Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA),
www.howstuffworks.com

AUDIO TECHNOLOGY I

STANDARD 8.0

Students will show ability to design and create audio production for desired mood and effect.

LEARNING EXPECTATIONS

The student will:
8.1   Perform music and production techniques to establish moods.
8.2   Identify changes in tempo of music.
8.3   Demonstrate knowledge of layout planning for desired effect.
8.4   Evaluate the basic stages of pre-production, production, and post-production.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
8.1   Use various music and production techniques to establish moods.
8.2   Listen for and list changes in tempo of various music styles.
8.3   Design a layout of studio equipment and plug-ins to create desired effect.
8.4   Chart the basic stages of pre-production, production, and post-production.

SAMPLE PERFORMANCE TASK

- Execute a professional session.
- Edit and mix for final product.
- Evaluate and critique for meeting of goals and objectives.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

STANDARD 9.0

Students will show understanding of the music business.

LEARNING EXPECTATIONS

The student will:
9.1   Demonstrate knowledge of how budgeting is used in production planning.
9.2   Demonstrate awareness of how marketing is used to bolster sales of artist recordings.
9.3   Compare job opportunities, requirements, security, and retirement possibilities.
9.4   Identify indirect career opportunities surrounding the music and audio industry.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
9.1   Create a variety of budgets for master and demo recordings sessions.
9.2   Develop marketing strategies to bolster sales of artist recordings.
9.3   List job opportunities, requirements, security, and retirement possibilities in the audio industry.
9.4   List indirect career opportunities surrounding the music and audio industry.

SAMPLE PERFORMANCE TASK

- Create a budget for three hour recording session.
- Plan and produce an audio commercial for an average retail product.
- Edit and mix for final product.
- Evaluate and critique for meeting of goals and objectives.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

\STANDARD 10.0

Students will learn the basics of written music.

LEARNING EXPECTATIONS

The student will:
10.1   Demonstrate knowledge of standard music notation.
10.2   Demonstrate knowledge of "Nashville Numbering System".

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
10.1   Write a music chart using standard music notation.
10.2   Write a music chart using the "Nashville Numbering System".

SAMPLE PERFORMANCE TASK

- Convert a piece of standard notation music to the "Nashville" system.
- Create music notation from Pro Tools software program.
- Write "Nashville Number Chart" by listening to a song on the radio.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

STANDARD 11.0

Students will show knowledge of the history of the audio industry.

LEARNING EXPECTATIONS

The student will:
11.1 Examine the history of recording and sound reinforcement technology.
11.2 Analyze the history and development of music styles and their influence.

PERFORMANCE INDICATORS: EVIDENCE STANDARD IS MET

The student must:
11.1 Describe how audio recording and sound reinforcement technology has evolved.
11.2 Describe how sound recordings have influenced history and the development of music styles.

SAMPLE PERFORMANCE TASK

- Prepare written report on development of audio equipment of choice.
- Compare at least two different music genres.
- Write a report describing how music chronicles history.

INTEGRATION LINKAGES

Mathematics, Technical Math, Physics, Science, Technology Literacy, English IV: Communications for Life, Problem-Solving, SkillsUSA, National Science Foundation, Computer Skills, Internet Navigation Skills, Presentation Skills, Critical Thinking and Problem Solving, Technical Writing Skills, Secretary's Commission on Achieving Necessary Skills (SCANS), Occupational Safety and Health Administration (OSHA), Tennessee Occupational Safety and Health Administration (TOSHA), Environmental Protection Agency (EPA), www.howstuffworks.com

AUDIO TECHNOLOGY I

SAMPLING OF AVAILABLE RESOURCES

www.howstuffworks.com

Recording in the Digital World: Complete Guide to Studio Gear and Software
by Thomas E Rudolph, Vincent A Jr Leonard

Digital Home Recording: Tips, Techniques, and Tools for Home Studio Production
edited by John Chappell

Practical Recording Techniques by Bruce Bartlett, Jenny Bartlett

Arranging in the Digital World: Techniques for Arranging Popular Music Using Today's
Electronic...by Corey Allen

Promises to Keep: Technology, Law, and the Future of Entertainment by William W Fisher

Home Recording Power by Ben Milstead

On-Location Recording Techniques by Bruce Bartlett, Jenny Bartlett

This Business of Music: The Definitive Guide to the Music Industry
by M William Krasilovsky, Sidney Schemel

The Art of Digital Audio by John Watkinson

The Audiopro Home Recording Course by Bill Gibson